

## BENCHMARK TEST FOR JENDL-3.3 LIBRARY BY ANALYSES OF A SERIES OF EXPERIMENTS AT THE FAST CRITICAL ASSEMBLY (FCA) OF JAERI

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The evaluated nuclear data library JENDL-3.3 was released in May 2002. Some of the main revised data from JENDL-3.2 library are as follows: (1) the elastic scattering cross section of graphite, (2) the resonance parameters of structural materials and (3) the resonance parameters, the fission cross section and the capture cross sections of U-235. To validate those data, benchmark tests on keff values and the central fission rate ratios were made by analyzing a series of experiments at the Fast Critical Assembly (FCA) of JAERI.

Eleven different FCA cores with simple composition and geometry have been selected from a viewpoint of benchmark test; eight uranium fueled cores, FCA Assembly IX-1 to IX-7 and XIX-1, and three plutonium fueled cores, FCA Assembly, X-1, X-2 and XIX-3.

In the test a continuous-energy Monte Carlo code MVP was used to minimize the uncertainties of core geometrical modeling and of data processing for the multi group cross sections generation. Each core is modeled as precisely as possible in the calculations. The number of neutron histories was 2 million in all of keff calculations and 5 million in the central fission rate ratios calculations.

The calculated results were compared between JENDL-3.3 and JENDL-3.2 libraries. In the core composed with 93% enriched uranium and diluent material of graphite, the ratio between calculation and experiment (C/E) for keff decreases as the neutron spectrum becomes soft. On the other hand this tendency is not found in the JENDL-3.2 calculations. This spectrum dependency might be caused by the revised capture cross section of U-235. Further investigation is required to make the sensitivity study in detail. In the other uranium cores, there is no large discrepancy in the C/E values between JENDL-3.3 and JENDL-3.2. In the plutonium cores the JENDL-3.3 gives better C/E values than the JENDL-3.2.